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ABSTRACT

The humanities course described in this paper encourages high school students to examine alternatives for the future and to make decisions on the basis of the most desirable outcomes. Classroom instructional materials include films, sound and slide sets, film strips, tape recorders, a record player, and a television. Students participate in small-group discussions, brainstorming, simulation games, and individual and/or small-group projects concerned with the rapid pace of change in their personal lives and in the world around them. Speakers from the local college and the community, field trips, and other departments within the school are also employed in order to spark the awareness of change. Specific materials, ranging from Alvin Toffler's "Future Shock" to Andy Warhol's "Coke Bottles," are used to convey perspectives of technological and social change. (KS)

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FUTURISTICS FOR TODAY'S STUDENT: A COURSE DESCRIPTION

Let us imagine a particular space and time circa 1986: a home in the suburbs of Phoenix. A man is sitting in the middle of a circular room and on the curved walls around him he can see the ocean-surf breaking over the rocks and foaming up the beach; a fish hawk trembling in the luminescent sky. Across from him sits another man, and the two of them are talking to each other. Once in awhile, the boom of the bursting surf and the cry of the hawk intrude upon their conversation.

Let us now say that the room is underground and has no "real" view at all; that what is experienced on the curved walls is an image on a "flat wall" television screen, prerecorded in Hawaii, and now being replayed electronically. Let us further say that the first man is "real", but that the second man is being broadcast by laser beam from a satellite and recreated, in color and full dimension (you could walk around his image and see the back of his head), by "holography," so that though he is "there" in Phoenix at the moment, he is "in reality" at the same moment sitting in his study at the University of Edinburgh.

Where, in this situation does "reality" begin and end? This will be a question that --by 1986--we will, individually, be asked to answer. There is nothing in the situation just described that does not appear to be perfectly feasible within perhaps the next ten years; certainly within the next twenty. We have already entered a new world of experience.1

The preceding quick look into the future by Don Fabun, Editor of Kaiser Aluminum News, illustrates the dramatics of change wherein technology is moving the experience itself--in sound and color and full dimension--to the human nervous system. Fabun believes the human sensory apparatus will not easily be able to distinguish between an electronically created experience and an in-person one. It all comes down to the advent of television in the home just after World War II. The future arrives quickly these days.

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Even at this writing, one of the most far-out bicentennial celebrations is being awaited while a Viking Spacecraft, launched by the National Aeronautics and Space Administration, is expected to touch down on Mars early in July, and a second one is expected to arrive in September. Probably the most baffling question man asks about the universe concerns life on other planets. Will the two Vikings find evidence of life on Mars? The bicentennial tourist who visits the National Air and Space Museum, scheduled to open in July in Washington, D.C., will view an "awesome skyscape of starry heavens, planets, and man based astronauts" in the fifty-eight foot high mural of artist Robert T. McCall. McCall, whose broad understanding of present space hardware enables him to anticipate future spacecraft designs, says, "My special dream is to take a trip into space myself, and the shuttle may make this come true. . . By 1982, the shuttles will enable us to make many space trips every year. . .These shuttles will carry all manner of orbiting equipment--laboratories, telescopes, microwave stations, repair facilities--as well as the human crews to assemble, operate, and repair all of this hardware."[2]

One who has walked on the moon calls attention to a frontier closer to man--the mind. Edgar D. Mitchell, astronaut on Apollo 14 lunar expedition, is among those interested today in the study of psychic development. He expresses his views of this phase of science in a special section of a recent issue of Saturday Review as does author George Leonard who writes, "The tapping of man's vast potential may well usher in the next chapter of the great human adventure: the emergence of a higher consciousness."[3]

Preparing students to live in the world just described requires a change in perspective. Dr. Edmund J. Farrell, in a research report sponsored by the National Council of Teachers of English, quoted Grant Venn, author of Man, Education and Work, on the concept of change: "It is not simply a case of new sets of social and economic relationships replacing older ones, but of the new ones themselves being replaced at a faster

and faster rate, with only those adapting to change surviving. This concept of change is not new; what is new is the change in the rate of change."[4]

R. Buckminster Fuller, comprehensive designer and inventor of the geodesic dome said at the Vision 65 conference at Southern Illinois University, ". . .I think it is safe to say that 99 percent of all the important work now being done by men--relating to our evolutionary advance--is work going on in the areas above and below the tunable range of man's direct optical or other sensorial participation in the electromagnetic spectrum. Society neither hears nor sees the great changes going on."[5]

Young people have to cope with this same rapid change that adults do. They have to cope with the unknown changes in their personal lives as well as with world-wide issues. In order to help students contend with these dilemmas, education itself must change. Dr. Farrell's report (referred to in the above paragraph) states, "Reasons given for the dissatisfaction of students with their schooling are numerous and moot, but foremost among them is that education has not been responsive to the times. . ."[6]

Alvin Toffler, best known for coining the term "future shock", takes to task schools that base their teaching on the notion that tomorrow's world will be basically familiar:

> All of us project an ever-changing image of the future on the screen of consciousness. Our heads teem with assumptions about the future. . .For it is precisely this ability to visualize futures, to generate and discard thousands upon thousands of assumptions about events that have not yet--and may never--become reality, that makes man the most adaptive of animals. It is a prime task of education to enhance this ability, to help make the individual more sensitively responsive to change. We must therefore, redefine learning itself. Put simply, a significant part of education must be seen as the process by which we enlarge, enrich, and improve the individual's image of the future. 7

Ideally, all education is supposed to be for the future; but a close look at schools and universities tells us that technological and social changes are outracing the educational

system. Postman and Weingartner, in Teaching as a Subversive Activity, point out that a future-orientation is our best insurance against a generation of "future shock" sufferers and that bringing in the future can help liberate almost any subject matter. Provided future-oriented questions and discussions are adapted to their level of understanding, students of all ages will benefit.[8]

A growing interest in the shape of tomorrow and a desire to "liberate the subject matter" in Humanities I classes at Magic City Campus of Minot High School prompted Pauline Fisher and me to begin that course with a nine week unit titled "Futuristics". Until two years ago the unit was named "Man and Technology". The 1974 spring issues of Media and Methods were instrumental in providing the inspiration for a more future-oriented direction.[9] The main objective of the unit is included in the description of the label Futuristics set down by Betty Barclay Franks and Mary Kay Howard, co-directors of the Futuristics Curriculum Development Project for the Greater Cleveland Area: "Futuristics is the ability to examine alternatives for the future imaginitively and creatively while making current choices in such a way that the most desirable alternatives can be realized."[10] "Futuristics", then, became our choice from other labels which included "future studies", "predicting", "forecasting", and "projecting".

Postman and Weingartner emphasize good teachers share a concern for process as against product. "They are learner- or problem-oriented with a certain disdain for syllabi".[11] The importance of the process was recognized early in the planning stage and became an exciting part of the whole unit. As a result, the electronic revolution and information explosion have had an important influence on the implimentationof "Futuristics". Here the classroom environment includes films, sound and slide sets, filmstrips, tape recorders, record player and television. An up-to-date "futures data center" is found in the student-collected clippings which are filed and kept in the Contact-covered box on the center table. Walls and shelves

are covered with books, magazines, newspapers, posters, collages, sculpture, and paintings. It is easy to justify comments that are made pertaining to certain "housekeeping habits" in this classroom. Students become involved in small group discussions, simulations, brainstorming, projecting, individual and/or small group projects, speakers from our local college and community, field trips, and other departments in our own school. Students write personal reactions to futuristics in a journal four or five times a week. This writing not only serves as an outlet for the student's thoughts, but also as a personal thought carrier between teacher and student.

To induce the student to "think futures", he fills out questionnaires on "What Do I Know about Me?" (a kind of self inventory), and "The Future Is Me". Here the student projects his thoughts into the next 20, 30, or 40 years from now. Early in the unit "The Nasa Problem" and "Kidney Machine" exercises[12] prove helpful in indocrinating the student into the process of small group discussions for problem solving. Individual forecasting and dating of events likely to occur in the future provide excellent material for a class scenario. "You are there" happens when the student becomes involved in a simulation called Future Decisions: The I. Q. Game.[13] This simulation can be completed in two or three days. At this point the student sees the need for future-minding and becomes aware of one of the tasks employed by futurists--creating alternative futures. Information about this simulation can be found in Media and Methods, November, 1974. The I. Q. Game has an additional objective in that it forms a background for an area which future-oriented students are bound to enter later in the course--the biological revolution. The mind and the supermind are only one part of this revolution. It also involves the questioning of values when issues such as genetic counseling, cloning, questioning when life begins and death occurs, and others in this field arise. When students are more future-oriented in their thinking later in the unit, they view a series of filmstrips called Redesigning Man: Science and Human Values. Discussions and decisions on the quality of our lives follows this audio-visual aid.[14] After the I.Q.

Game, the student is introduced to the textbook, Worlds in the Making: Probes for Students of the Future, by Marjorie Dunstan and Patricia Garlan.[15] This book contains writings and questions which encourage active reading and stimulate critical and creative thought about future and change. Specific selections are chosen from it for discussion as the occasions arise.

Now that the student begins to think futures, his attention is turned to technology as a dehumanizing agent. It has been assumed most students have been surrounded all their lives by beneficial machines and are avid consumers of technology's output. This part of the unit will attempt to show man could be robbed of freedom and humanity and even enslaved by the machine which he has created to serve him. Here films on technology might be shown such as Can Computers Think? and The Information Machine.[16] The student becomes acquainted with the robopathic phenomena of Lewis Yablonsky's book, Robopaths: People as Machines.[17] The class textbook has a fine chapter to use here called "Machines, Enemy or Ally". Science fiction stories, bringing out the robopathic phenomena or dehumanizing agent, are also read. Two of these read at this time are "Harrison Bergeron", by Kurt Vonnegut, Jr., and "A Bad Day for Sales", by Fritz Leiber. The teacher should aready be convinced of the benefits of science fiction to future studies. One of the most comprehensive pleas for science fiction that I have found is a paper presented to the 1971 NCTE Convention by Dave Samuelson, entitled, "A Proposal for the Mandatory Use of Science Fiction in the General Curriculum".[18] For the student's benefit here, the teache. might read aloud a short excerpt by Kurt Vonnegut, Jr., called, "Science Fiction", from his book Wampeters, Foma and Granfaloons. An excellent source for the teacher to use in locating science fiction titles of stories that relate to various aspects of technology is Grokking the Future, by Hollister and Thompson.[19] The teacher can put folders together for students after locating the stories and compiling them.

For a change in pace, students always welcome music. It can be used at this time for its interest in social comment as well as poetry. Students have no problem in locating songs like "In the Year 2525" by Zagor and Evans, "The Family of Man" by Three Dog Night, "Big Yellow Taxi" by Joni Mitchell, and "Rocket Man" by Elton John.[20] To call attention to the robopathic influence in art, flashing pop and op art slides on the screen proves effective. The student can easily see technology's effects in the subject matter of common objects and mass production in such works as Andy WArhol's Coke Bottles, or in the billboard art of James Rosenquist. Mixing the disciplines is fun and easy in English class.

Meanwhile, the student is reading Arthur C. Clarke's 2001: A Space Odyssey,[21] and the classical computer Hal is showing him how people depend on machines. Discussion in small groups is followed by journal writing on "What does it mean to be human?" "Cybernation", the term relating to computer strategy, becomes a part of the student's daily vocabulary and a new way of thinking about himself and about machines. He is now ready to move into the next phase of the unit.

Here the student becomes aware of current trends and future projections. The speed of technological innovations and their potential growth are called to the student's attention by two films: Future Shock, based on Alvin Toffler's book of the same name, and This Is Marshall McLuhan.

Students are visibly shaken after viewing Future Shock. However, after showing the film three years, one can tell the shock on the oncoming group of students becomes less evident each year. Terms like cryonics, computerized art, modular homes, disposable bodies, robots, test tube babies, cloning, Sim I, and race manipulation are not as shocking as they used to be. This film is sure to be followed by a lively discussion and some firm opinions.

The McLuhan film helps the student to see the implications of technology on media. The student also receives McLuhan's book, The Medium is the Massage, and discusses it in terms

of the media itself.[22] In what way are the media affecting society? In support of the importance of this subject, see again Postman and Weingartner, who say anyone who teaches futures should be concerned and even preoccupied with the media of communications.

Another comment on the future to call to the student's attention at this time is found in an essay called "The Future: Prefigurative Cultures and Unknown Children", by Margaret Meade.[23] Ms. Meade makes a point regarding the relationship between the young and the old in this age of change. She states that the speed of change has brought about the appearance of a new style, called "prefigurative culture", in which the young must ask the questions, and trust between the old and young must be established so that the elders can be permitted to work with the young on the answers. Women are also thinking futures!

Now the student turns his attention to planners of the future and considers alternative futures. Again many films are used, especially from the "free" lists. Two very fine filmstrips and recordings shown at this time are: Toward the Year 2000: CAn We Survive the Future?,[24] and Life Style 2000 A.D.: An Inquiry into the Future.[25] The book I Seem to Be A Verb, by that great designer R. Buckminster Fuller, is presented in an enjoyable format and keeps the student entertained while he tries to figure out how to read it. The student usually sees Fuller as an optimistic septuagenarian who believes the environment can be designed to suit man's needs. Fuller's book Operating Manual for Spaceship Earth [26] contains a chapter called "Spaceship Earth" that ties in well with Part II of the text book (Worlds in the Making) called "Exploring Spaceship Earth". Another humane approach to the future can be found in the chapter titled "The Unbelievable Future" from Rene Dubo's book, So Human an Animal.[27]

Continuing with planning and choosing alternatives, the student reads science fiction including: "The Green Hills of Earth" by Robert Heinlein; "What If", by Isaac Asimov;

"There Will Come Soft Rains", by Ray Bradbury; and the poem "We'll All Be Spacemen before We Die", by Mike Evans. Individuals report on "The Next 50 Years", from the Saturday Review, August 24, 1974.[28] While the student enters and leaves the classroom, electronic music on the record player includes the following: Journey to the Centre of the Earth, Rick Wakeman (this album, inspired by Jules Verne's book of the same name, really warrants a class hour's listening); 2001: A Space Odyssey (Sound Track); Switched-on Bach and The Well Tempered Synthesizer, buth by Walter Carlos; and Poeme Electronique, Edgar Varese.

Different media can show the student how experiencing movement through space and time is beginning to change. There are many science fiction stories dealing with time travel; a short one to read to the class is "A Sound of Thunder", by Ray Bradbury. The flowing movement of laser holography may replace the bits and pieces of computer art which students view in several futures films such as Future Shock. A hair-raising, confusing, thought-provoking film to show students, which raises some of the logical paradoxes time travel would present, is La Jettee, a science fiction fantasy about World War III.[29]

After thinking futures, considering the robopathic phenomena, and becoming aware of current trends and projections into the future, it is time to come up with some goals for the future world. Again the students form small groups. This time they arrive at what they believe to be, in order of their importance, the ten most important problems facing the universe. Remember what Toffler said about "heads teeming with assumptions" and "the ability to visualize futures." The three problems that most often concern the students here are nuclear war, pollution, and the population explosion. The small groups present their goals to the class, and the whole class then tries to settle on the ten in order of importance. Again, there is plenty of food to feed the journal.

At last the student is ready to think and write about his

own personal goals, which will, of course, be flexible and subject to change. Values have now been forced into the foreground. It is time to question values and make them explicit. After becoming acquainted with the seven processes of valuing, as set down by S. Simon, L. Howe, and H. Kirschenbaum in Values Clarification,[30] the student will prepare to make critical decisions. Playing with alternative futures is one way to emphasize the relativity of values that might otherwise be taken for granted. As Postman and Weingartner point out, it helps the student develop a built in "crap-detector"[37] which embodies the idea that students need to develop critical and analytical abilities. John Gardner uses the term "self-renewal".[32] Abraham Maslow favored the tag "selfactualized person". All of these words are used in discussing the person who puts emphasis on human potential. To describe such a person, an excellent filmstrip with cassette is used at this time, titled, Toward A Psychology of Being: The Selfactualized Person.[33]

The student now decides whether he would prefer to be like "the man who never rocked the boat" in the poem, "The Unknown Citizen", by W. H. Auden, or like the "crap-detecting", "self-renewal", "selfactualized" person. He is given time for thinking about and dealing with change. William R. Martin's small book, To Cope with the Current, is another excellent aid to the teacher of futures. He states it is important here that the teacher provide the time, structure, and setting for the student to look inside himself at what he already has--his competencies and capacities.[34] During this time, then, the student makes a list of life goals--"things he would like to do before hie dies" or "things he would like to do in the next week". The next move is to define the steps to take if the goals are to be reached.

Final activities include completing projects, filling in a "Values Coat of Arms",[35] and one called, "Paint Me a Future". Here with the aid of water colors and color crayons, the student uses his imagination and makes a colorful picture of

the future to decorate the classroom.

Teaching Tomorrow Today, by Ronald T. Laconte, is an excellent source for the teacher to use when preparing a handout for suggested projects.[36] Completed projects have included: a report of an interview with the City Manager on the future of Minot; an illustrated lecture with the laser beam borrowed from the Science Department; several miniature geodisic dome constructions; many science fiction stories and poems; an illustrated talk on disappearing species; artistic futures greeting cards; a model of a future city; a sculpture from bicycle parts; arrangement of a trip to the Science Department for a demonstration on holography by a science instructor; an explanation of the Moog synthesizer, using records; student-produced slide presentation on man and his environment; and many posters, collages, and paintings depicting futuristics.

Futuristics is not a discipline in itself and need not mean another course; but, as shown here, it can be a revision of a course being taught. The teacher needs to be versed in futuristics, but need not be an expert. There is a large amount of bibliographical apparatus available pertaining to the subject, so this is no problem.[37] The two keys for the teacher moving into futuristics are: a genuine concern about futuristics, and a willingness to open his mind to the world about him and think in terms of alternatives.

1
Don Fabun, The Dynamics of Change (Prentice-Hall, Inc., Englewood Cliffs, N. J., 1967), Pt. III, pp. 20-21. This book is an outstanding resource for the teacher of futuristics containing forecasts based on accelerating trends in our society today.

2
Ann B. Cadman, "Michelangelo of the Space Age," The Futurist, X (June, 1976), 49. (World Future Society, P.O. Box 30369, Bethesda Branch, Washington, D. C. 20014). A semi-monthly journal of forecasts, trends and ideas about the future. Joining the Society is a good idea for anyone really interested in future studies.

3
"Mind and Supermind: Expanding the Limits of Consciousness," The Saturday Review, (February 22, 1975), 12.

4
Edmund J. Farrell, Deciding the Future: A Forecast of Responsibilities of Secondary Teachers of English, 1970-2000 A.D., Research Report 12 (Urbana, Ill.: National Council of Teachers of English, 1971), 6. Billed as a forecast of responsibilities of secondary teachers of English; offers some background and research and predictions that extend to all teachers and all parts of the curriculum.

5
Edmund J. Farrell, English, Education, and the Electronic REvolution (Urbana, Ill., National Council of Teachers of English, 1967), 2.

6
Farrell, Deciding the Future. . ., 9.

7
Alvin Toffler, Learning for Tomorrow: The Role of the Future in Education (New York: Random House, 1974), pp. 12 & 13. Collected by the author of Future Shock, this book of original materials is about the ways in which the very notion of future time is dealt with in our schools. It offers specifics on the place of the future in the curriculum as well as implications that range beyond the classroom walls and beyond the present.

8
Neil Postman and Charles Weingartner, Teaching as a Subversive Activity (New York: Dell, 1969), pp. 203 & 204.

9
Media and Methods (February, March and April, 1974). These three issues were of prime importance in helping to focus on a futuristic unit. This magazine about the media, issued 9 times a year is loaded with current materials.

10
Betty Barclay Franks and Mary Kay Howard, "Tomorrow's Curriculum Today", English Journal, (April, 1974), 30.

11
See Postman & Weingartner, 205.

12
Sidney B. Simon, Leland W. Howe, Howard Kirschenbaum, Values Clarification: A Handbook of Practical Strategies for Teachers and Students (New York, 1972), pp. 281-294. The exercises referred to in this book are "The Fall-out Shelter Problem" and "Alligator River" which are similar to the ones mentioned in my paper.

13
Future Decisions: The I. Q. Game (Saga Publications, R.R. #2, Greentree Road, Lebanon, Ohio, 45036, 1975).

14
Redesigning Man: Science and Human Values (Harper & Row Media, New York). This is a 6 filmstrip set with resource book dealing with the biological revolution and ethics.

15
Mary Jane Dunstan and Patricia Garlan, ed., Worlds in the Making: Probes for Students of the Future (Englewood Cliffs, N. J.: Prentice-Hall, 1970). A remarkable textbook

16
Two excellent sources for free-loan films are Modern Talking Picture Service, Inc. (9129 Lyndale Ave. South, Minneapolis, Minn. 55420) and EPKO, Inc. (631 N. P. Ave., Fargo, N. Dak. 58102).

17
Lewis Yablonsky, Robopaths: People As Machines (Baltimore, Maryland: Penguin Books Inc., 1972).

18
Dave Samuelson, "Proposal for the Mandatory Use of Science Fiction in the General Curriculum, " (NCTE paper, Las Vegas, 1971), ERICABSTR, ED 089277. Another paper that praises science fiction for imaginatively exploring the future and gives help to teachers planning science fiction courses is: Dorothy Grant Schulz, "Futuristic Humanistic Science Fiction," (NCTE paper, Kansas City, Missouri, April, 1975), ERICABSTR, ED 108208.

19
Bernard C. Hollister and Deane C. Thompson, Grokking the Future: Science Fiction in the Classroom (Dayton, Ohio, Pflaum/Standard, 1973). Student exercises and selected bibliographies accompany each chapter.

20
B. Lee Cooper, "Exploring the Future through Contemporary Music," Media & Methods, (April, 1976).

21
Arthur C. Clarke, 2001: A Space Odyssey (New American Library, 1968)

22
Marshall McLuhan, Quentin Fiore, The Medium Is the Massage (New York, Bantam Books, 1967). A resource book for the teacher to be used here is McLuhan's Understanding Media: the Extensions of Man (New American Library, 1964).

23
Alvin Toffler, The Futurists (New York: Random House, 1972), pp. 27-50. This book, edited by Toffler, contains writings by many futurists and should be on the list of one who wants an introduction to futuristics. The appendix contains sample syllabi and a directory for future studies.

24
Toward the Year 2000: Can We Survive the Future, Parts I and II. (White Plains, New York: The Center for the Humanities, 1973).

25
Life Style 2000 A. D.: An Inquiry into the Future (Chicago: Denayer-Geppert).

26
R. Buckminster Fuller, Operating Manual for Spaceship Earth (Simon and Schuster, 1969) and I Seem to Be a Verb (New York: Bantam, 1970). These books are aids in the understanding of interrelated systems.

27
Rene Dubos, So Human an Animal (New York: Charles Scribner's Sons, 1968) pp. 3-30.

28
Saturday Review World, Golden Anniversary Issue Part 2, "The Next 50 Years", (August 24, 1974). In this magazine experts take a look into the future: Werner Von Braun, Isaac Asimov, Neil Armstrong, Rene Dubos, Clare Boothe Luce and Norman Cousins are among these experts. World subjects include the arts.

29
La Jetee (The Pier, Jetty) (29), (b/w), $25, (Contemporary-McGraw Hill, 828 Custer Avenue, Evanston, Ill. 60202)

30
See Simon, Howe and Kirschenbaum, p. 19

31
See Postman and Weingartner, pp. 1-15

32
John W. Gardner, Self-Renewal: The Individual and the Innovative Society (New York, Perennial Library, 1963) pp. 131-142.

33
Abraham Maslow: Towards Self-Actualization (Stanford, California: Multi-Media Productions, Inc.). This filmstrip and cassette describes the self-actualized person.

34
William R. Martin, To Cope with the Current: Guidelines and Activities for Learning to Deal with Change (Washington, D.C.: Association of Teacher Educators). This small book suggests students can become more cope-able by learning eight guidelines for dealing with change. Offers activities teachers might use to help students "build-in" these guidelines. $3.00.

35
"The Values You Live By", Scholastic Voice, (September 19, 1974) pp. 2-7.

36
Ronald T. LaConte, Teaching Tomorrow Today (New York: Bantam, 1975). This is a small book containing many study guides and activity suggestions.

37
Bibliographical apparatus includes the following: Several articles from the English Journals--Sheila Schwartz, "Science Fiction: Bridge Between the Two Cultures" (November, 1971), pp. 1043-1051; Dan Verner, "To Cope with the Current" (January, 1975) pp. 8586-87; Phyllis Tashlik, "Science Fiction: An Anthropological Approach" (January, 1975), pp. 78-79; Allan A. Glatthorn's review of Tomorrow: Science Fiction and the Future by Alan L. Madsen, New York: Scholastic Book Service, 1973, (September, 1974). There is an excellent unit plan in Thematic Units in Teaching English and the Humanities (Urbana, Illinois: N.C.T.E.) pp. 181-208, called "The Future Arrives" by Kurt Leonhard. Another excellent plan book for teachers is Suzanne Millies, Science Fiction Primer for Teachers (Dayton, Ophio: Pflaum Publishing, 1975.) Elizabeth Calkins and Barry McGhan, Teaching Tomorrow (Dayton, Ohio: Pflaum, 1972), an annotated list of recommended science fiction novels suitable to different levels of reading is included here. A resource for futures teachers on films is Hal in the Classroom: Science Fiction Films, Ralph J. Amelio (Dayton, Ohio: Pflaum, 1974). For background on interrelated systems, see also The Closing Circle, Barry Commoner (Alfred Knopf, 1971), and The Limits to Growth, Bonnella Meadows, et al (New American Library, 1972). For an

overview of the biological future by an authoritative populariser of science, read The Biological Time Bomb, Gordon Rattray Taylor (New American Library, 1969). A comprehensive course of instruction involving futures through exploration of unknown worlds, mental and physical, through fiction and non-fiction is titled The Outer Limits: English, Barbara R. Tyler and Joan Biesekerski of Dade County Public Schools, Miami, Florida (ERIC ED 064 718, CS 200 009). Two additional well-done slide and cassette shows include on which outlines various techniques to predict the future, An Inquiry into the Future of Mankind, and another which considers current and future communications media and tools and their cultural and social effects, Media and Meaning: Human Expression and Technology (both from Center for Humanities, Inc., White Plains, N. Y.)